business to try to employ the method. Our medical schools have been occupied with the affairs of the body, and have given no attention whatever to affairs of the soul up to the present time. Ultimately physicians will be able to employ psychotherapy, but not now as a class. For the present we have not the education, and to place this matter in the hands of men who are not prepared by character and by training to undertake it will inevitably bring discredit and failure upon the procedure.

Doctor E. von Adelung, Oakland: I would like to say just one word with regard to a point which was brought up and left unfinished in relation to the Emmanuel movement toward tuberculosis. I speak of this point because I am aware of a misapprehension that is pretty prevalent, and that is that the Emmanuel movement is something mystic that cures tuberculosis independently. Last September I visited the International Congress in the East, and I visited Boston and I looked around to see what this Emmanuel movement is in its relation to tuberculosis. I could not see myself how any form of psychotherapy could take the bacillus of tuberculosis out of the lung. I found that the statement of facts were these, that the so-called Emmanuel movement in tuberculosis consisted of a certain number of persons, who, seeing the great problem of tuberculosis throughout the world, conceived it their duty to help persons suffering from this disease. They did not go to them and say, "you are not sick"; they went to them in their homes and established a system of visiting the homes through their nurses and personally, and they got these people out into the fresh air and urged them to believe that this was the cure of tuberculosis, and they held out the hand of hope and in this way pursued the ordinary course of treatment. If this is anything peculiar which should be labeled "treatment of tuberculosis in science," I fail to see it. When we hear of the Emmanuel movement doing so much, it is because they are employing our methods. That, added to the encouragement which they hold out, and which it is really the duty of all of us to give, helps with the cures obtained. Many years ago I heard our tuberculosis authorities in this state speak, and it was emphasized that the personality of the physician in charge of these cases was of great import in the results obtained, and it behooves us to remember this. I have seen different classes of cases that had need of psychic treatment. In one case, for instance, I was called to see a man who had been six weeks in bed with great pain in the abdomen. I went through a thorough examination and found no organic lesion. I applied the psychotherapy in this case and in 24 hours he got well. In another case, a woman was operated upon in the right iliac region, and was three weeks in the hospital. She complained greatly of a continuance of pain, and after I worried over her case it suddenly struck me one morning that there was nothing the matter. I changed the treatment and applied the psychotherapy, and in three days the patient was up and has been well ever since. We have all had numerous cases of that kind. In another case, a girl of 8 years of age, was able to see with one eye and not with the other. It was merely a case of hysterical blindness, and instillations of pure water, with proper suggestions, were immediately followed with success.

Doctor W. T. Barry, Santa Barbara: Our profession is a scientific one, and I claim that anything unscientific should be let alone by us. It is granted that both Christian Science and the Emmanuel movement are both unscientific, and we should let them alone absolutely. I believe that we are on dangerous ground when we try to undertake this work, and that the next thing will be that we will be having spiritualistic seances.

Dr. J. D. Arnold, San Francisco: This is a question which has been so often and thoroughly discussed that no one can hope to say anything new upon the matter. I wish to advert to one aspect of the subject, and that is the attitude of the medical profession towards psychotherapy as instanced in these modern movements. After all, they are a recrudescence of an old subject which in the beginning was only pseudo-scientific, but in our day really appears in the guise of true science. The two attitudes usually assumed toward the Emmanuel movement were very well illustrated by the two papers read to-day. Perhaps I should not speak of them as two distinct attitudes. They are the attitudes which a scientific man will take toward a subject at two periods of his education. Dr. Barlow made a full resume of the subject and abounded in wise advice. Dr. Brown probably found himself in that earlier situation at one time, and now assumes another attitude full of enthusiasm, and the latter does him great credit. If we are sincerely concerned for the good of our patients, we will welcome any means under Heaven that offers us promise to help us to that end. Of course, this is not entirely a disinterested view because Dr. Brown admits that the primary reason for sending his patient to the priest is because he really can not afford the time to treat that patient as he will be treated by his priest. That is an economic view of the question. Let us not forget a fact too often overlooked in considering this subject—namely, that the physician stands distinctly at a disadvantage as against any of these various cults, though all of them are not cults in the bad sense of the word. He stands in this point of disadvantage, that as a true and scientific man he can not deal on an equal footing with these people. He must be truthful, he must be sincere. He may not pretend to be the possessor of a power to heal and cure, though such pretense is an advantage to him in his ministrations. It is unfortunately true that in order to best affect the individual through hypnosis by suggestion in any other state, you have first to impose upon that individual. Take, for instance, such a performance as that of Carpenter or of Bishop. They carry with them a lot of fake subjects and put these subjects through their paces and by the mere exhibition of a false hypnosis, bring their audiences into a receptive state of mind for real hypnosis. During the performance of these fraudulent "tests," it is not at all uncommon to see a number of sensitives in the audience fall over hypnotized. In fact, the scientific physician must explain to his patient that what is to be accomplished by his ministrations is to be wrought by simple suggestion. This appears commonplace and has little effect in rendering the patient receptive. The "fakir" permits his subject to consider him the repository of a mysterious influence—a belief in which produces a very helpful receptivity on the patient's part. The quasi-miraculous cures wrought by the exhibition of the remains or relics of diseased saints belong to the class of "cures by suggestion." What would become of such results if the subjects affected by these and all other analogous kinds of "suggestion therapeutics" were given a complete understanding of the underlying scientific rationale, and the honest physician is bound to do this.

TRICHINOSIS.*

With a Report of Four Cases.

By A. M. TOWER, M. D., Lodi, Cal.

Trichinae are widely distributed, because of the wandering of rats, and, no doubt, inhabit the muscles of all carniverous animals. As a recognized

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disease in man, trichinosis is limited to persons who eat rare or raw pork.

The parasite undergoes three stages of development:

First. The *adults* live in the small intestines, the male, one twenty-fifth of an inch in length by one one-hundredth in diameter; the female, one-twelfth of an inch in length by one seventy-fifth in diameter. They are circular in cross-section and appear as minute, thread-like bodies. The males die shortly after copulation. The females may live for weeks in the intestine or bore into the mucous membrane, where they deposit their numerous young, about fifteen hundred to each female.

Second. The *embryos,* from one-fortieth to one-tenth of an inch in length, migrate directly through the tissues into the striated muscles. They begin to reach the muscles in from seven to ten days after infection, and, in the muscle fibres develop into

Third. The *encysted larvae.* These may remain alive in the muscles for years, cases being reported for as long as thirty years. Lime-salt is deposited about the invader soon after the first week he has reached his natural home. These larvæ need only to be taken into the stomach, where the capsule is destroyed, and they pass to the small intestines, there to develop within two days to the adult. The latter copulate, the male dying, and the female delivering the embryos in less than a week after the infection.

Source of Infection. Man obtains infection from eating pork, the pork from eating rats or infected pork, and the rats from eating pork-meat or one another; thus keeping up an endless chain of infection.

Duration. Trichinosis may last from a few days to several months, usually running its course in from three to eight weeks. Convalescence is slow and may require from two to five months. Some cases are recorded in which patients do not recover for years.

Symptoms. The symptoms depend entirely on the amount of infection received at one time or repeated infection from the same source. Some infections are no doubt entirely overlooked. The more severe, typical cases present three fairly defined periods: the gastro-intestinal, the muscular, and the secondary-edema.

On January 4th I was called to attend the family of Mr. Klebe, which consisted of Mr. Klebe, wife, sister, and little daughter, aged thirty-two, twenty-six, twenty-one, and five years, respectively, American born of German descent. They reported the following conditions:

The family had eaten Christmas-dinner together, all enjoying good health. On December 27th they became ill, slightly so, at first, with gastro-intestinal symptoms, were nauseated, had pains in the stomach, felt chilly, and three of them were suffering from a diarrhea. Some had vomited several times; all appeared anemic and had edema of the eye-lids. Upon examination, I found them to be suffering from pain over the region of the diaphragm, which was tender. There was a slight tympany, the tongue, mouth and throat were congested, and they complained of pains in the back and thighs. The pulse rates ranged from 90 to 120, with temperatures from normal to 101 degrees.

My first impression was that they had been poisoned and I began a searching inquiry as to diet, canned meats, vegetables, fish, milk, cheese, etc., but nothing out of the ordinary seemed to have been eaten. Finally, I found they had been eating freely of fresh pork. This meat they had purchased December 15th. Part had been pickled in salt brine in a galvanized tub, and part had, about December 20th, been freely spiced with pepper, salt and garlic and made into summer sausage, stuffed into gut, and allowed to dry.

Here, we thought, we had the cause of the illness, probably lead or zinc-poisoning from the tub. I gave all liberal doses of magnesium sulphate with opiates to relieve the cramps and vomiting. The following morning, the patients were not improved as I anticipated, and, suspecting trichinosis, I obtained specimens of blood, urine, excreta, and the meat. These I sent to Dr. E. A. Burchard of Lodi for examination. The doctor reported in the afternoon that esinophiles were present in large proportions in the blood, about thirty per cent; also the urea increased to four per cent in the urine, showing a rapid tissue-waste as in ptomain poisoning. Upon further search in the evening, the doctor reported the sausage full of trichinæ-spirellæ.

The Skin, Mucous-Membranes, and Lymphatics. All the patients appeared very anemic during the full course of the disease, the anemia remaining well into convalescence. Puffiness of the eyes was plainly noticeable on my first visit. This remained prominent for ten days, gradually subsiding. It appeared very similar to edema from over-doses of arsenic. There was a pale, bluish discoloration in this edema of the lids. The little girl during the first, second, and third weeks, had an eruption, red patches, similar to urticaria, on the back of her hands and over the body. These disappeared and reappeared at intervals during the three weeks. From the early stages of the disease in the second week, the skin was covered frequently with profuse perspiration, the more severe in those who were the more infected.

Secondary edema developed during the third week of the disease. Mrs. Klebe, who died on the twenty-ninth day, had edema of the hands and lower limbs with considerable swelling about the jaws. Miss Klebe developed edema of the limbs, jaws, and neck, presenting the appearance of the German's "disease of the big head"; this swelling was accompanied about the neck with an otitis-media, developing edema about the mastoid, which was lanced. The tympanum ruptured and there was a considerable discharge from the ear for a period of two weeks. The secondary edema remained for five weeks, gradually subsiding. The little daughter developed an edema during the third week, which extended from the feet to the axilla. The skin was dry and shiny, with deep indentations on pressure, which remained for some time after the pressure was removed. In the regions of the axilla and hips, the edema was

from one to two inches in depth, and lasted well into the tenth week of the disease, gradually subsiding.

Gastro-intestinal symptoms prevailed from the onset, ranging from nausea to severe vomiting. During the first days, tenderness was elicited over the diaphragm and abdomen, being most severe over the epigastrium. Mrs. Klebe was slightly constipated and needed catharsis during the course of the disease. Mr. Klebe, at intervals, suffered part of the time with diarrhea followed by constipation. Miss Klebe vomited frequently during the entire course of the disease and had watery movements, averaging from four to fifteen stools daily. The vomiting seemed partially due to nervousness. Though she suffered from a complication of the ear, her symptoms remained always most favorable. The little girl suffered from chronic constipation, and daily doses of calomel, salts, and cascara were necessary for the relief of this symptom.

The appetite remained good with all the patients, and they were allowed a liberal diet of milk, cream, puddings, rice, soft egg, whiskey, icecream, etc. Nourishment was given freely, with the exception of a few days in the case of the two who died, when, owing to the closure of the mouth, it became necessary to administer nutrient enemas; the jaws became locked, and the patients were unable to swallow the food offered them. Miss Klebe and the child, during their convalescence, had ravenous appetites.

Nervous Symptoms. Mrs. Klebe suffered from insomnia and pain, was much distressed and extremely nervous for days, wishing to be turned over every few minutes. She became quite delirious a few hours before death. Mr. Klebe pursued a very resigned course, and, outside of being turned frequently and asking occasionally for rest, sleep, and relief from pain, remained clear of mind up to within a few hours of death. Miss Klebe showed a very nervous condition, owing to the ear complication. She also vomited frequently. The child ate and slept continually, only asking to be turned sometimes. Medicines were not resorted to for relief of pain or to produce sleep at any time during her long illness.

Muscular Symptoms. The muscles of the diaphragm, abdomen and back were sore and stiff during the early period. Within three days, stiffness and cramping of the thighs and shoulder muscles developed, being more painful at the tendinous insertions, though not directly in the joints. Within another three days the muscles of the forearms, hands, lower limbs and feet were invaded, the lower limbs were semi-flexed, the arms and forearms flexed upon the chest, any attempt at movements of extension causing excruciating pain. The muscles of the jaw and pharynx were also affected; the patients who died becoming unable to get their teeth apart. After the fifth and sixth weeks, the other two gradually came back to extension of the muscles. This improvement came about slowly and, in Miss Klebe, was not complete for three weeks, and in the child, for five weeks.

Urinary Symptoms. The urine early in the disease became scanty, amounting during the stage of profuse perspiration, to from as low as three to twenty ounces daily. Specimens, when fair quantities were being voided showed four per cent of urea, instead of one per cent. The urine remained nearly all the time, free from albumins or sugar, was of light specific gravity, and light in color. During convalescence in the eighth week, the specific gravity of the specimen I examined was 10-30.

Temperature and Pulse. Mrs. Klebe's temperature remained during the first and second weeks between 99 and 101 degrees, showing very little fluctuation during the twenty-four hours. The pulse beat 120 to 130 per minute. Three days before death, the temperature rose to 102 degrees to 104 degrees, the pulse 130 to 160, being weak and irregular.

Mr. Klebe's pulse and temperature during the first week, ranged similar to that in typhoid fever; morning temperature, 99 degrees, afternoon up to 103 degrees, pulse 80 to 100. The second and third weeks, the pulse remained quite stationary, 100 to 120; temperature 99 to 101. Three or four days before death, the temperature again rose to 103 degrees, pulse 130 to 140.

Miss Klebe's temperature for five weeks remained from 98 to 102 degrees, pulse rate 108 to 125, while, in the case of the child, the pulse remained almost stationary for six weeks at 120 to 140, temperature 98 to 100.

Clinical Diagnosis. Some authorities make a point of differentiating between typhoid and trichinosis. Though it is true that, with the exception of Mr. Klebe for a few days, the pulse and temperature did not appear at all like typhoid, while the anemia and edema of the eyelids have nothing in common with that disease, still this point does not seem to be of much importance.

As for chronic, muscular rheumatism, the steady, gradual, orderly appearance of the invasion is a distinct symptom of trichinosis, while in ptomain poisoning, we have a more rapid onset of all symptoms. Where it is possible to procure specimens of a portion of the infected part, the trichinæ are easily found with the aid of the microscope.

The picture of acute, gastro-intestinal irritation accompanied by soreness and tenderness over the abdomen, with gradual development of pain in the thighs and shoulders, then in the forearms and lower limbs, with early prostration, early general anemia, puffy eyelids, with a rapid pulse and corresponding low temperature, once seen, is never to be forgotten, and can hardly be mistaken for that of any other disease. To be sure, many light cases have, no doubt, been entirely overlooked.

Pathology. We obtained specimens of the meat from the same pig in a neighbor's family. Though the meat was infected, none of the family suffered from the disease, the meat having been thoroughly cooked. Other specimens of meat from the same butchering, contained no trichinæ.

Dr. E. A. Burchard of Lodi, also made microscopical examinations of the urine, feces, and blood during the progress of the disease. First, the urine showed no particular change with the exception of

lessened quantity and an increased percentage of urates, indicating toxemia.

The feces, the doctor examined several times for the adults and embryos, but was unable to find them; they must remain in the mucous lining of the intestines. A peculiarity of the fecal material under the glass was its constant motion, though sealed, which may have been caused by the glycerine taken by the patients.

The blood showed the most changes as a diagnostic feature. It showed secondary anemia all the time after the first few days with leucocytosis. Then the esinophiles commenced to increase, so that by the end of the tenth or twelfth day, a different leucocyte count showed over thirty-five per cent. The esinophiles should be about three per cent. In the two patients who died, they remained round and compact. In the two who lived, as soon as they showed signs of recovery, the esinophiles began to break up and the granules became scattered all through the specimens. Increased quantities of blood plates also appeared at this time.

In the muscles, the embryos increased in numbers in the tendinous portions. They destroyed the striated muscles, cutting up the tissue. Within their body walls, granular masses were found, and in some of the specimens, these granular masses formed the beginning of capsulation about the trichinæ. In a specimen, obtained from the deltoid of Mrs. Klebe, the estimated count was thirty-six thousand to the cubic inch. In a specimen from the forearm of Mrs. Klebe, by actual count, one hundred and sixty were found in one-twelfth of a cubic inch, so that we could estimate two hundred and seventy-six thousand per cubic inch. They could be seen for thirty-six hours alive and in motion, coiling and uncoiling. The pointed ends showed great elasticity, the diameters increasing and decreasing, and no doubt they are capable of moving through tissue, as do the leucocytes. At no time were the embryos found in the blood; they must travel directly through the tissue.

Prognosis. The prognosis seems better in children than in adults, and better in cases with severe diarrhea. It is good after the sixth week. When appetite, sleep and respiration remain good, the prognosis is favorable. Elevation of temperature and extreme dyspnea are bad signs. I found the choking, the dry throat, and the closure of the jaws the most distressing of all symptoms.

The mortality ranges from zero to one hundred per cent; this depending entirely on the amount of infection, and bodily resistance. Mr. Klebe undoubtedly infected himself day after day for a week, as he was continually nibbling at the summer sausage until I began the investigation.

Prevention. Prevention may be brought about by thorough cooking of all pork, or by government inspection of all pork butchered.

Treatment. One of our nurses partook of some of the fatal sausage, taking within twenty-four hours an emetic and cathartic. While she felt very uneasy and was in bed a few days, it is doubtful if she had symptoms of the disease. During the early days of the disease, by recommendation of different authorities, calomel, glycerin, resorcin, thymol and iodin were all tried. Mr. Klebe, who had the latest infection, and who was the last to go to bed, was able to take the anthelmintics and retain them without much disturbance of the stomach and intestines for several days. Yet, we evidently obtained very little result from their use, and it is very doubtful if any of them can do much good. We soon resorted to stimulants and nourishing food, with hypnotics and analgesics to produce sleep and relieve pain.

The nursing was trying and tedious. The patients were given warm baths and alcohol rubs. They needed constant turning. Mrs. Klebe's position was changed every ten to thirty minutes during her last week, this being accomplished by slowly turning the body, head, shoulders, the body and feet alternately. As the patients were suffering pain during all motion for days, they were unable to help themselves and lay stiff and doubled up.

Convalescence was slow, sure, and gradual, once it had begun. At the present time Miss Klebe is doing the housework, and the little girl is playing about the yard. Outside of motion, they do not feel much ill effect of the disease.

CASE OF HYPERTROPHIC PYLORIC STENOSIS WITH AUTOPSY FINDINGS.*

By ALFRED BAKER SPALDING, M. D., San Francisco.

A primipera twenty-one years old, born in San Francisco, gave birth to an illegitimate male child on November 29th, 1908, at the Central Emergency Hospital. Mother and child were transferred the same day to the Obstetrical Department of the University of California Hospital. On account of the child being born the interne neglected to take the usual history of the mother. For the following two weeks the record of the mother was negative except for a marked odor to the lochia. She nursed the baby for nine days and then gradually weaned it as she intended to leave the baby with the Associated Charities for adoption.

The child weighed on admission 2K 760 gms. and was normal except for a supernumerary toe on the left foot. On the second day an active gonorrheal ophthalmia of the right eye developed, which persisted with a less active involvement of the left eye for three weeks. The extra toe was removed on the twelfth day without anesthesia. A persistent attack of snuffles followed the ophthalmia.

Whey was alternated on the ninth day with the breast feeding, and the food was gradually changed according to routine plan for such bottle babies so that on the twenty-first day the baby was taking twenty ounces of a mixture containing 20% of upper 16 milk, 5% of milk sugar, 0.5% of sodium chloride and 80% of water, which was divided into ten feedings of two ounces each. Gain in weight was satisfactory. On the twenty-first day the baby

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